

Bonn. zool. Beitr.	Bd. 43	H. 2	S. 325—331	Bonn, Juli 1992
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## The immature stages of *Sesia yezoensis* (Hampson, 1919) (Lepidoptera, Sesiidae)

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**Abstract.** The larva and pupa of the clearwing moth *Sesia yezoensis* (Hampson, 1919) are described and illustrated. The host-plant, *Salix sachalinensis*, is recorded for the first time and some notes on the bionomics of the insect are included.

**Key words.** Lepidoptera, Sesiidae, *Sesia yezoensis*, immature stages, host-plant.

In northern Japan, the clearwing moth *Sesia yezoensis* (Hampson, 1919) is occasionally known as a pest of cultivated poplar, *Populus nigra* Linnaeus var. *italica* Muenchhausen, a tree introduced from Europe (Inoue, 1982: 236). Fukuzumi discovered this large, conspicuous clearwing moth at Maruyama-dani, Hase-mura, Kamiina-gun, Nagano-ken, central Honshu, in early August 1985. The natural, woody host-plant was hitherto unknown until we found larvae and pupae of *yeyoensis* in the trunks of *Salix sachalinensis* Friedrich Schmidt at the same locality during the following summer. The specimens from *Populus nigra* var. *italica* (Figs 1, 2 & 5) and the population from *Salix sachalinensis* (Figs 3, 4 & 6) are both referable to *Sesia yezoensis* (Hampson). Descriptions of the mature larva and pupa of *yeyoensis* and bionomic notes are given below.

### *Sesia yezoensis* (Hampson, 1919) (Figs 1—13)

Mature larva (Figs 9—10): Length 37.0—50.0 mm. Head light brown; mouth parts dark brown. Body bone-white; prothoracic shield light brown; thoracic legs light brown, claws dark brown; anal plate light yellowish brown. Height and width of head (Fig. 10a) almost equal, coronal suture short; frontal clypeus very small. Six ocelli (Fig. 10b), arrangement elongate-trapezoid, ocelli V and VI widely separated from ocelli I—IV. Labrum as illustrated (Fig. 10c). Mandible with three large teeth (Fig. 10d). Spiracle of 8th abdominal segment large, as large as prothoracic spiracle, and located postero-dorsally (Fig. 9). Anal plate (Fig. 9) with a small dark brown spine medio-posteriorly. Proleg (Fig. 10h) with about 33 crochets. Anal proleg (Fig. 10i) with about 12 crochets.

**Chaetotaxy:** Head (Fig. 10a & b); A1, A2 & A3 very long, A3 longest; L1 rather long. O1 long, but shorter than O2 and slightly anterodorsal to ocellus II. Prothorax (Fig. 10e) with L group trisetose, L1 very long. Abdomen (10f & g) with SD1 very long, SD2 microscopic on 1st—7th segments. L1 of 1st—8th segments very long. SV group of 2nd—6th segments each on separate small pinaculum. L2 of 9th segment absent.

Material examined: 10 ex. Japan: Honshu — 2 ex, feeding in a gallery between the bark and wood of *Populus nigra* var. *italica*, Akita-ken, Akita-shi, Ohsumi, 10. VII. 1985, K. Funahashi; 8 ex, feeding in a gallery between the bark and wood of *Salix sachalinensis*, Nagano-ken, Kamiina-gun, Hase-mura, Maruyama-dani, 9. VIII. 1986, Y. Arita.

Pupa (Figs 7, 11—13): Length 21.5—29.5 mm, width 6.5—7.5 mm. Dark brown, long, fairly robust. Frontal process (Figs 11a & b) large, rounded in dorsal view; sharply pointed dorsally in lateral view. Clypeus large, posteriorly triangular-trapezoid; maxillae large, longer than prothoracic legs. Metathoracic legs reaching to posterior margin of 5th abdominal segment. Wing tips reaching to posterior margin of 4th abdominal segment. Alar sheaths on dorsum of mesothorax large and strong. Spines on dorsum of abdominal segments consisting of two rows on segments 2—7 in male and 2—6 in female, and one row on segment 8 and 9 in male (also on 7 in female). Tenth abdominal segment (Figs 13a—c) with 7 pairs of spines; one pair of spines on dorsal side, three pairs on lateral side and three pairs on ventral side.

Material examined: 4 ex. Japan: Honshu — 4 ex, pupa from cocoon between bark and wood of *Salix sachalinensis*, Nagano-ken, Kamiina-gun, Hase-mura, Maruyama-dani. 9. VIII. 1986, Y. Arita.

**Bionomics:** The general habits of the immature and adult stages of *S. yezoensis* very closely resemble those of *S. apiformis* (Clerck, 1759) (Fibinger & Kristensen 1974: 30; Baker 1985: 371). The adult female of *S. yezoensis* flies actively around the trunk of the host-tree; the eggs are usually oviposited singly, rarely in clusters, in crevices of the bark, in cracks or on the surface of the lower part of the trunk of the host-tree during the day (Figs 6 & 8). The larva makes an irregular gallery between the bark and wood in the lower part of the trunk and into the thick root near the surface of the ground. The elongate-ovate cocoon is 10.0—12.0 mm in width and 26.0—30.0 mm in length. It is constructed of small pieces of wood chips and lined with tough silk and is situated in the galleries close to the bark. The adult emerges in the morning, from the end of June to early August, the pupa remaining extruded from the cocoon (Fig. 7). Copulation takes place on the trunk, or sometimes on the leaves of the lower part of the host-tree (Fig. 5). The larval period is not known in Japan, but we found pupae together with apparently full-grown larvae under the

Figs 1—8: *Sesia yezoensis* (Hampson).

1. Male adult from *Populus nigra* var. *italica*; 2. Ditto, female; 3. Male adult from *Salix sachalinensis*; 4. Ditto, female; 5. In copula on leaf of *Populus nigra* var. *italica*, 10. VII. 1985;
6. Egg laying on trunk of *Salix sachalinensis*, 5. VIII. 1985. 7. Extruded pupal case, host-plant, *Salix sachalinensis*; 8. Egg clusters on surface of bark, host-plant, *Populus nigra* var. *italica*.

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1



2



3



4



5



6



7



8

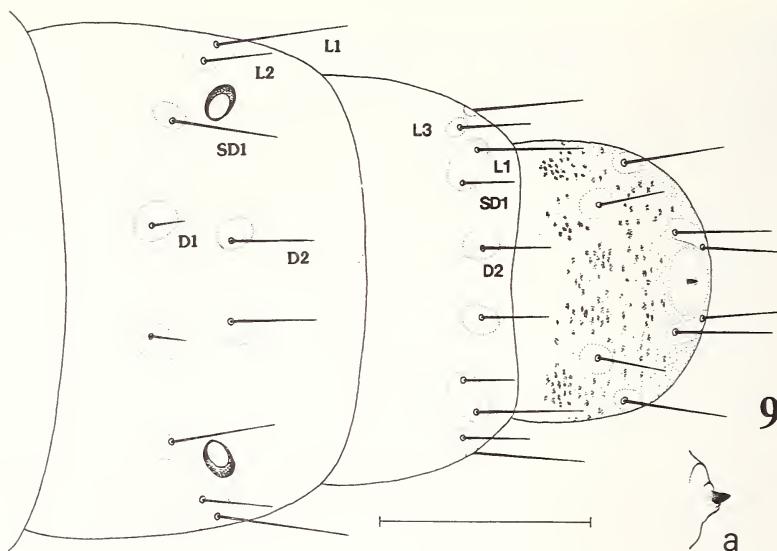


Fig. 9: *Sesia yezoensis* (Hampson), dorsal view of eighth to tenth abdominal segments. a: enlarged anal shield spine. Scale line = 2.0 mm.

bark of the host-tree. It appears that the larval period lasts for two years. It is well known that *Sesia* species strongly resemble hornets (? *Vespa crabro*) in profile. The wing of *S. yezoensis* exhibits strong mimicry to the yellow-marked horsefly, *Tabanus chrysurus* Loew (Tabanidae), according to observations by K. Fukuzumi.

Host-plants: *Populus nigra italicica* and *Salix sachalinensis* (Salicaceae).

### Zusammenfassung

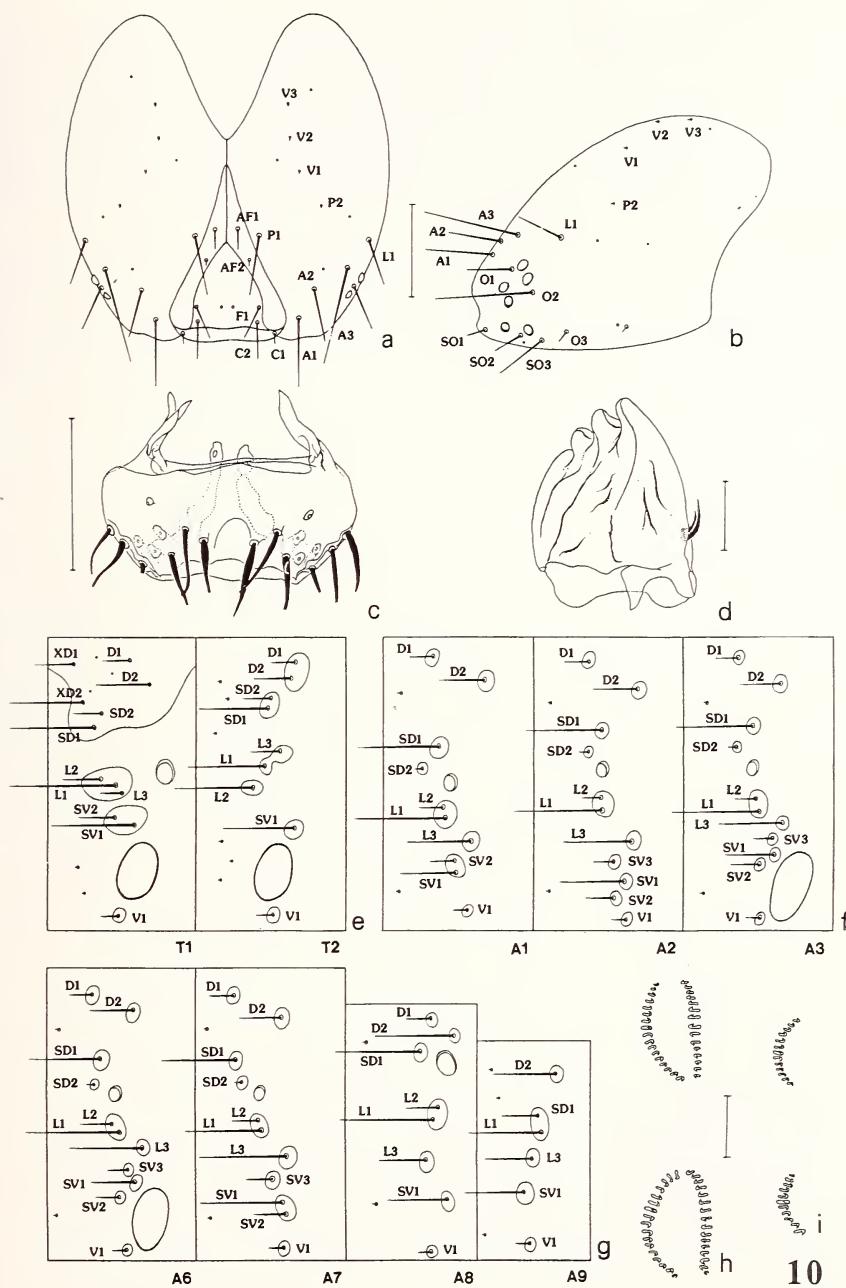
Raupe und Puppe des Glasflüglers *Sesia yezoensis* werden beschrieben und abgebildet. Die Futterpflanze *Salix sachalinensis* wird zum erstenmal nachgewiesen, und einige Angaben zur Bionomie werden gemacht.

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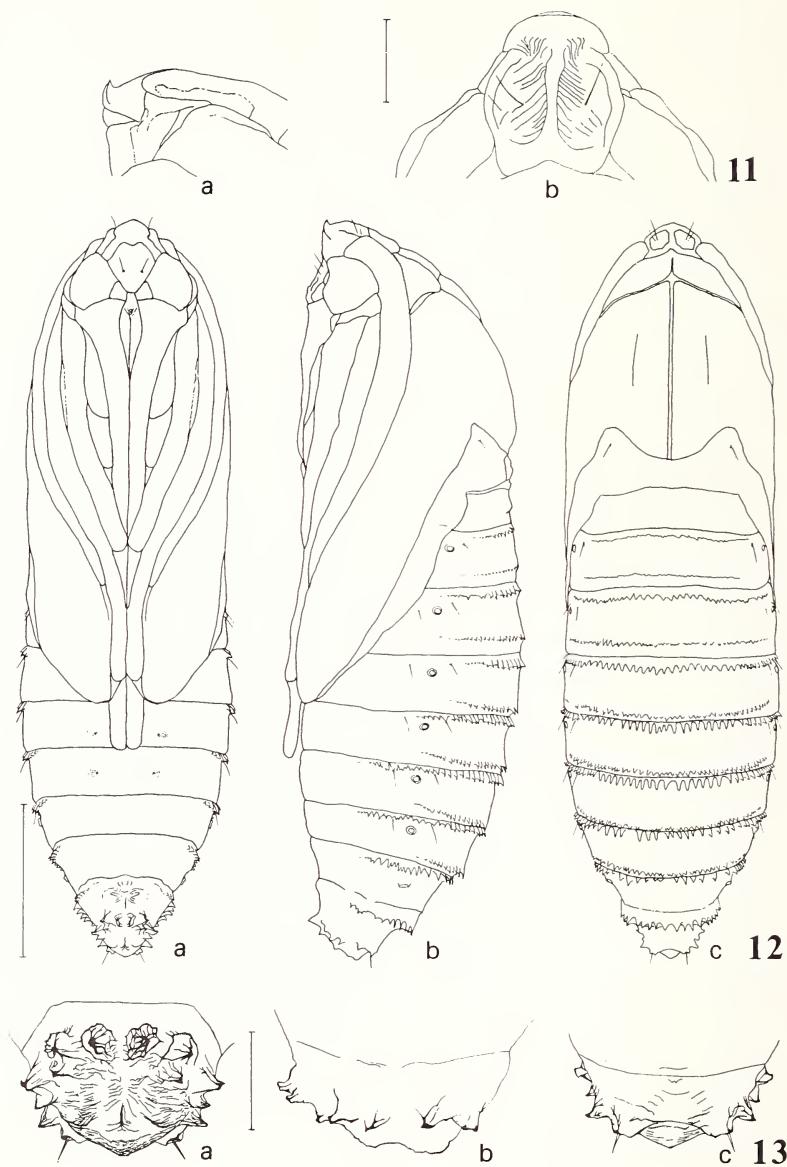
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Fig. 10: *Sesia yezoensis* (Hampson), mature larva.

a. Head, dorsal view; b. Oceller region, left side; c. Labrum, dorsal view; d. Mandible, ventral view; e. Pro- and mesothorax; f. First to 3rd abdominal segments; g. Six to 9th abdominal segments; h. Third abdominal proleg, ventral view; i. Anal proleg, ventral view. Scale line: a & b = 1.0 mm; c, d, h & i = 0.5 mm.



Figs 11–13: *Sesia yezoensis* (Hampson), pupa, male.

11. Frontal process. a: lateral view; b: dorsal view; 12. Total aspect. a: ventral view; b: lateral view; c: dorsal view; 13. Spines of tenth abdominal segments. a: ventral view; b: lateral view; c: dorsal view. Scale line: 11a–b = 1.0 mm; 12a–c = 5.0 mm; 13a–c = 1.0 mm.

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Jahr/Year: 1992

Band/Volume: [43](#)

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Artikel/Article: [The immature stages of Sesia yezoensis \(Hampson, 1919\) \(Lepidoptera, Sesiidae\) 325-331](#)